1) Name
2) taking AP?
3) turned in form
4) which exam & why?
5) 3-4 topics that concern you the most

True or False?
If False, find a function that shows it
If true, give me the sketch of an argument

1.1) The tangent to a curve at a point is the line that touches the curve at that point, but does not cross it there.

1.2) The tangent line to a curve at a point cannot touch the curve at infinitely many other points.

2.1) If f(x) < g(x) for all x>0, and both lim(x->infinity, f(x) ) and lim(x->infinity, g(x) ) exists,

then lim( x-> infinity, f(x) ) < lim( x-> infinity, g(x) )

aaa

Mar 5-7:36 AM

$\boxed{8.8/6}$

$$\int_0^\infty xe^{-x^2}\,dx = \lim_{b\to\infty}\int_0^b xe^{-x^2}\,dx$$

Let $u = -x^2$

$\frac{du}{-2} = \frac{-2x\,dx}{-2}$

$-\frac{1}{2}du = x\,dx$

$$-\frac{1}{2}\int e^u\,du$$

$$= -\frac{1}{2}e^u + C \Rightarrow -\frac{1}{2}e^{-x^2} + C$$

$$\lim_{b\to\infty} -\frac{1}{2}e^{-x^2}\Big|_0^b$$

$$= \lim_{b\to\infty}\left[-\frac{1}{2}e^{-b^2} - \left(-\frac{1}{2}e^0\right)\right]$$

$$= \lim_{b\to\infty}\frac{-1}{2e^{b^2}} + \frac{1}{2} = \frac{1}{2}$$